

What Is Claimed Is:

Sub 1

1 1. A satellite constellation comprising:
2 a plurality of satellites, each of said
3 satellites having an RF ground link for communicating
4 with a ground station and an optical link for
5 communication with at least one of the plurality of
6 satellites;
7 each of said satellites having a
8 reconfigurable optical transmitter for sending and
9 receiving data streams, each reconfigurable optical
10 transmitter having a first optical carrier associated
11 therewith and a reconfigurable optical receiver;
12 said plurality of satellites arranged to
13 have a first subset of satellites, said first
14 satellite configured to communicate;
15 said plurality of satellites arranged to
16 have a second subset of satellites having at least
17 one different satellite than that of said first
18 subset, said second subset of satellites are
19 configured to communicate.

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1 2. A satellite constellation as recited
2 in claim 1 wherein each of said plurality of
3 satellites comprises a communications table.

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1 3. A satellite constellation as recited
2 in claim 2 wherein said communications table has

3 plurality of routes for communicating between
4 ~~satellites~~ in said first subset.

1 *Sub Obj* 4. A satellite constellation as recited
2 in claim 1 wherein said reconfigurable transmitter
3 comprises an array of laser diodes.

1 *Sub Obj* 5. A satellite constellation as recited
2 in claim 1 wherein said optical transmitter is
3 tunable to generate a plurality of wavelengths.

1 *Sub Obj* 6. A satellite constellation as recited
2 in claim 1 wherein said reconfigurable receiver is
3 one from the group consisting of a Fabri-Perot
4 filter, a wavelength division multiplexer, and a
5 fiber grating-based optical switch.

1 *Sub Obj* 7. A satellite constellation as recited
2 in claim 1 wherein said satellites are in low earth
3 orbit.

1 8. A satellite constellation as recited
2 in claim 1 wherein said satellites are in medium
3 earth orbit.

1 9. A satellite constellation as recited
2 in claim 1 wherein said first and second subsets are
3 aligned with a landmass.

1 10. A satellite constellation as recited
2 in claim 1 wherein said subset comprises seven
3 satellites using three optical carriers.

1 11. A global communications system
2 comprising:
3 a plurality of satellites spaced about the
4 earth;
5 first subset of said plurality forming a
6 local area network over a landmass, said subset
7 having a first plurality of optical carriers assigned
8 thereto for intercommunication;
9 said first subset having a second plurality
10 of optical carriers assigned thereto for
11 communicating with other satellites outside of said
12 first subset.

1 12. A global communications system as
2 recited in claim 11 wherein each of said plurality of
3 satellites comprises a communications table.

1 13. A global communications system as
2 recited in claim 11 wherein said communications table
3 has plurality of paths for each path for
4 communication between of said first subset.

1 14. A global communications system as
2 recited in claim 11 wherein each of said satellites

3 comprises a reconfigurable transmitter and a
4 reconfigurable receiver.

1 15. A global communications system as
2 recited in claim 11 wherein said reconfigurable
3 transmitter comprises an array of laser diodes.

1 16. A global communications system as
2 recited in claim 11 wherein said optical transmitter
3 is tunable to generate a plurality of wavelengths.

1 *Sub B* 17. A method of communicating within a
2 satellite communications comprising the steps of:
3 deploying a plurality of satellites;
4 grouping a first subset of the plurality of
5 satellites into a first local area network;
6 forming a plurality of routes between the
7 satellites in the first local area network; and
8 assigning an optical carrier for each
9 route.

1 *Sub 17* 18. A method as recited in claim 17
2 further comprising the steps of forming a second
3 local area network by grouping a second subset of the
4 plurality of satellites and interconnecting the first
5 local area network and the second local area network
6 to form a wide area network.

1 19. A method as recited in claim 17
2 wherein the step of assigning an optical carrier
3 comprises the step of obtaining the optical carrier
4 and route from a respective optical wavelength
5 selector and connection table.

1 20. A method as recited in claim 17
2 wherein the step of assigning comprises the step of
3 reusing the optical carriers.

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